

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To: LAWRENCE J. GOTTS  
SHAW PITTMAN  
1650 TYSONS BOULEVARD  
MCLEAN, VA 22102-4859

## PCT

### NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL SEARCH REPORT OR THE DECLARATION

(PCT Rule 44.1)

Date of Mailing  
(day/month/year) **05 NOV 2001**

Applicant's or agent's file reference  
GRI-101-PCT

FOR FURTHER ACTION See paragraphs 1 and 4 below

International application No.  
PCT/US01/18786

International filing date  
(day/month/year)  
12 JUNE 2001

Applicant  
GEOMATRIX SOLUTIONS, INC.

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.  
**Filing of amendments and statement under Article 19:**  
The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):  
  
    **When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.  
  
    **Where?** Directly to the International Bureau of WIPO  
            34, chemin des Colombettes  
            1211 Geneva 20, Switzerland  
            Facsimile No.: (41-22) 740.14.35  
  
    For more detailed instructions, see the notes on the accompanying sheet.
2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.
3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:
 

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.  
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.
4. **Further action(s):** The applicant is reminded of the following:
 

Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.

Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer  
EILEEN E. NAVE

Telephone No. (703) 308-0661

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference GRI-101-PCT	<b>FOR FURTHER ACTION</b> <i>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</i>	
International application No. PCT/US01/18786	International filing date ( <i>day/month/year</i> ) 12 JUNE 2001	(Earliest) Priority Date ( <i>day/month/year</i> ) 12 JUNE 2000
Applicant GEOMATRIX SOLUTIONS, INC.		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

**1. Basis of the report**

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the
- ☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (See Box II).

4. With regard to the title,

- ☒ the text is approved as submitted by the applicant.
- ☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

- ☐ the text is approved as submitted by the applicant.
- ☒ the text has been established, according to Rule 35.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

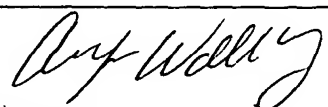
6. The figure of the drawings to be published with the abstract is Figure No. 1

- ☐ as suggested by the applicant.
- ☒ because the applicant failed to suggest a figure.
- ☐ because this figure better characterizes the invention.
- ☐ None of the figures.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/18786

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
IPC(7) :G21F 9/00, 9/04, 9/06, 9/16, 9/28, 9/30		
US CL :588/1, 2, 3, 4, 9, 11, 12, 14, 15, 16, 20, 249, 252		
According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols)		
U.S. : 588/1, 2, 3, 4, 9, 11, 12, 14, 15, 16, 20, 249, 252		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,926,771 A (BROWN) 20 July 1999, see whole document.	1-20
X	US 5,947,887 A (WHITE et al) 07 September 1999, see whole document.	1, 6, 8 & 11
---		-----
Y		2-5, 7, 9, 10 & 12-20
Y	US 5,960,368 A (PIERCE et al) 28 September 1999, see col. 5 and claims.	1-20
Y	US 6,023,006 A (FIQUET et al) 08 February 2000, see whole document.	1-20
Y,E	US 6,258,994 B1 (JANTZEN et al) 10 July 2001, see whole document.	1-20
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"A" document member of the same patent family	
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search	Date of mailing of the international search report	
21 SEPTEMBER 2001	05 NOV 2001	
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer	
Facsimile No. (703) 305-3230	EILEEN E. NAVE 	
	Telephone No. (703) 305-0661	

## Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

The technical features mentioned in the abstract do not include a reference sign between parentheses (PCT Rule 8.1(d)).

## NEW ABSTRACT

The present invention utilizes one or more processes to immobilize a waste that contains one or more of radionuclides, hazardous elements, hazardous compounds, and/or other compounds present in the waste. Each of the processes create a barrier against leaching and diffusion of the wastes. The first barrier is created by integrating the waste with an immobilizing mineral (100). The second barrier is a layer of non-radioactive or non-hazardous material (200) that covers the first barrier. The second barrier may be created by using an overgrowth procedure or by sintering. The third barrier is created by a rock or glass matrix (300) that surrounds the first and/or second barriers. The fourth barrier is created by ensuring that the rock or glass has the same or similar composition as the indigenous rock (400) at the disposal site. The resultant rock or glass matrix is in equilibrium with the groundwater or local hydrothermal solutions that are saturated with components of the indigenous rock of the disposal area.